SCIENCE & EDUCATION Impact

Benefits From the USDA/Land-Grant Partnership

Fashioning Foods

Designing foods to fit consumer health and taste demands.

In this busy world, it's hard to find the time to eat healthfully. Today's consumers want and need foods that are convenient, delicious, and nutritious. The U.S. Department of Agriculture (USDA)/Land-Grant partnership is meeting these needs.

Payoff

- **Cream of the crop.** Dairy products are an important, nutrient-rich part of our diets. Yet many people avoid these products because they can be high in fat and cholesterol. Researchers at **Maryland** and **Virginia Tech** are examining ways in which transfatty acids in dairy cattle rations could reduce the fat content of milk at its source. **Maryland** scientists are using fermented milk products to enhance the appearance and taste of low-fat milk products. Scientists from **Maryland, Ohio State, Utah State,** and **Wisconsin** are jointly evaluating procedures that could enhance cheddar cheese. Researchers at **Virginia Tech** are using natural milk components to produce cream that is 65 percent lower in cholesterol.

- **Fat stand-ins.** Americans consume about 37 percent of their calories from fat—7 percent more than nutritionists recommend. **Washington State** and **Georgia** researchers are developing naturally low-fat and low-calorie foodstuffs. At Washington State, researchers are transforming natural fats and oils, such as those found in milk fat, tallow, lard, and coconut, into naturally low-fat, low-calorie substitutes that taste and look as good as the higher-fat products. This technology could represent a $1 million boost to the snack food industry alone.

- **A muffin a day.** Many people feel that it's healthy to eat a muffin for breakfast, but most muffins are high in fat. Researchers at **Virginia Tech** have developed a great-tasting muffin that is 75 percent lower in fat and has 300 fewer calories than a traditional muffin. The low-fat muffin recipe uses Virginia soft red winter wheat flour and starch-related compounds—benefiting the state's wheat growers. The recipe has been adopted by several bakeries and chain stores.

- **Tortilla toppers.** Across the United States, tortilla demand has risen as consumption of this popular item has increased. With tortillas in mind, researchers at

RESEARCH, EDUCATION, AND EXTENSION AT WORK

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Texas A&M are identifying corn and sorghum kernel traits that improve the processing, shelf life, and healthfulness of certain grains.

- **Carrot-topping and broccoli-blocking.** Just because veggies are good for us doesn't mean we'll eat them. But Land-Grant research is increasing the appeal of some vegetables. **Georgia** researchers helped identify marketing strategies for Georgia's first carrot cooperative by showing, through taste-test studies, that Georgia carrots are among the sweetest in the nation, much like Georgia's sweet Vidalia onions. At **Texas A&M,** researchers developed a maroon carrot that is high in beta carotene—believed to have cancer-preventive qualities—and tastes sweeter than orange carrots. The new variety is being marketed under the name BetaSweet, and demand for the carrot is far exceeding supply. **Maryland** scientists have identified broccoli varieties with greater cancer-preventive qualities and are educating consumers and seed companies about these varieties.

- **Healthy extracts.** Researchers at **Illinois** are extracting cancer-fighting chemicals naturally found in plant cells and using them to produce beneficial anti-tumor compounds and natural colorants. These products now can be made in a lab, whereas they once were available only when certain plants were in season.

- **Genetic enhancement.** Soybean oil has many uses, but it has some drawbacks—including high fatty-acid content—that may cause health problems and limit the shelf life of processed foods. Plant breeders at **North Carolina State** and **Iowa State** have developed soybean varieties that are lower in some oils and fats. The **North Carolina** scientists have isolated a gene that affects oil synthesis and plan to use this information to reduce problem fats in other oil-rich food plants. Oil made from **Iowa's** new soybean, marketed as LoSatSoy™, is expected to compete well with canola oil. **Florida A&M** researchers isolated genes in peanuts, boosting the nuts' nutritional value and flavor.

- **Allergy-free foods.** Food allergies seem to be increasing. **California** researchers are finding ways to make some foods less troublesome to allergy sufferers by breaking down food proteins, resulting in greater digestibility. The technology also is being used to develop new foods, increasing the food choices of millions of people who suffer from food allergies. **Illinois** researchers have developed a soybean yogurt that is cholesterol- and lactose-free and tastes great.

- **Egg-zactly what the doctor ordered.** Eggs once were taboo because of their high cholesterol content. Researchers at **Michigan State**, however, have developed a way to reduce the cholesterol content of eggs by 96 percent without affecting flavor or nutritional qualities. **Texas A&M** and **Nebraska** researchers have incorporated more vitamin E and healthy Omega-3 fatty acids—found in fish oil—into eggs by increasing the levels of these compounds in laying-hen feed. **Texas** scientists have developed a new "designer" egg known as Eggplus™. A two-egg serving contains as much Omega-3 fatty acid as a three-ounce serving of red snapper. **Wisconsin** researchers have developed a way to lower fat and cholesterol in eggs by 25 percent. Their product, Egstacy™, is now being marketed.

- **Tofu testing.** Researchers at the nation's **1890 Land-Grant** institutions are developing new lines of soybean specifically bred for improving human nutrition. Tests of Asian soybean genotypes with important soy food characteristics are underway at **Alabama A&M, Alcorn State** in **Mississippi, Fort Valley State** in **Georgia, Tennessee State,** the **University of Maryland-Eastern Shore,** and **Virginia State**. Beans are grown and evaluated for production performance and then are made into tofu for taste testing. This research could benefit people worldwide by identifying soybean varieties that are more nutritious and better suited for food production.

USDA **United States Department of Agriculture**
Cooperative State Research, Education, and Extension Service

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